

1 1. A method of detecting network failures in a Voice  
2 over IP (VoIP) network comprising:  
3 producing failure rate information from VoIP call  
4 usage records associated with VoIP call traffic.

1 2. The method of claim 1, wherein producing comprises:  
2 examining the VOIP call usage records at given time  
3 intervals; and  
4 producing the failure rate information for each of  
5 the given time intervals.

1 3. The method of claim 2', further comprising:  
2 determining, for each time interval, if the failure  
3 rate information exceeds a defined threshold; and  
4 generating an alarm if it is determined that the  
5 failure rate information exceeds the defined threshold.

1 4. The method of claim 2', wherein producing comprises:  
2 extracting information from the VOIP call usage  
3 records;  
4 generating from the extracted information a list  
5 identifying disconnect cause codes for each network element  
6 for which such information is collected and associating with  
7 each of the disconnect cause codes a count corresponding to a  
8 number of occurrences in the VOIP call usage records; and  
9 determining, for each network element, a total count  
10 corresponding to a total number of the disconnect cause codes  
11 and a failure count corresponding to a number of failure type  
12 disconnect cause codes included among the identified

13    disconnect cause codes.

1    5.            The method of claim 3, wherein the network element  
2    is a VOIP gateway.

1    6.            The method of claim 3, wherein the disconnect cause  
2    codes are ISDN disconnect cause codes.

1    7.            The method of claim 3, wherein the failure rate  
2    information is produced for each network element.

1    8.            The method of claim 7, where the failure rate  
2    information comprises a failure rate based on the determined  
3    failure count and total count.

1    9.            The method of claim 8, wherein the failure rate is  
2    specified as a percentage of disconnect cause codes  
3    represented by the failure type disconnect cause codes.

1    10.           The method of claim 8, wherein the failure rate  
2    information further comprises the failure count.

1    11.           The method of claim 10, wherein determining if the  
2    failure rate information exceeds a defined threshold comprises  
3    determining if the failure rate exceeds a predetermined  
4    failure rate threshold and the failure count exceeds a  
5    predetermined failure count threshold and wherein generating  
6    an alarm comprises generating an alarm if both of the  
7    thresholds are exceeded.

1 12. The method of claim 3, wherein generating comprises:  
2 reporting the failure rate information  
3 electronically.

1 13. A method of detecting network failures in a Voice  
2 over IP (VoIP) network comprising:  
3 producing a failure rate from VOIP call usage  
4 records associated with VOIP call traffic for a given time  
5 interval;  
6 determining if the failure rate exceeds a defined  
7 threshold; and  
8 generating an alarm if it is determined that the  
9 failure rate exceeds the defined threshold.

1 14. A method of identifying network failures in a Voice  
2 over IP (VoIP) network comprising:  
3 generating alarms from VoIP call usage records.

1 15. A computer program product residing on a computer  
2 readable medium for identifying network failures in a Voice  
3 over IP (VoIP) network, comprising instructions for causing a  
4 computer to:  
5 produce failure rate information from VoIP call  
6 usage records associated with VOIP call traffic;  
7 determine if the failure rate information exceeds a  
8 defined threshold; and  
9 generate an alarm if it is determined that the  
10 failure rate information exceeds the defined threshold.